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ABSTRACT

This paper updates available evidence on the costs to society associated with noncompletion of school by substantial numbers of American youth. The only comparable treatment of this topic was published in 1972 by Henry M. Levin. The findings of this earlier study are recast to account for current earnings projections and price levels, and for current patterns of dropping out both nationally and in urban centers. The analysis includes women in the labor force. Several important qualifications regarding the cost perspectives chosen are discussed, and their possibilities for cost assessments are explored. A conclusion of this analysis is that a conservative appraisal of costs of dropping out yields estimates far in excess of the resources devoted to dropout prevention. A discussion of why this imbalance persists is presented, focusing on inadequate action by schools and communities and lack of consensus on the issue. Four tables and 14 endnotes are appended. (CJH)

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STANFORD EDUCATION POLICY INSTITUTE

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Abstract

This paper updates available evidence on the costs to society associated with non-completion of school by substantial numbers of American youngsters. The only comparable treatment of this topic (by Henry M. Levin) was published in 1972. The findings of this earlier study are recast to account for current earnings projections and price levels, and for current patterns of dropping out both nationally and in our urban centers. The analysis is also extended to women in the labor force. Several important qualifications regarding the cost perspectives chosen are discussed, and their implications for the cost assessments are explored. An important conclusion of the analysis is that a conservative appraisal of the costs of dropping out yields estimates far in excess of the resources devoted to dropout prevention. A discussion of why this imbalance persists is offered.

ON THE SOCIAL COSTS OF DROPPING OUT OF SCHOOL

The persistence of Americans through years of formal education exceeds that in most nations, and attainment levels of our young adults have never been higher. Our long-established ethics linking individual and societal fortunes to success in school thus appear alive and well; they are surely evident nowadays as we combat foreign technological competition through new emphases on mathematics and sciences in our classrooms. In a nation so accustomed to pinning hopes on its schools, many are surprised to learn that a fourth of our children are not finishing high school and that the numbers abandoning the diploma appear to be increasing. Also disturbing are reports that document dropping out in the nation's cities, where the national norms are frequently doubled.

Recent history casts some confusion on what we should think about our record for high school completion. It was not until 1940 that even half were graduated from high schools. Steady increases in completion rates since the turn of the century stalled at present levels in about 1970. One view suggests that we have reached natural limits in what we can do to engage large numbers in formal schooling. Not only did increasing program diversity and choice in the 1970s (the capstone of 40 years of Progressive trends in our high schools) fail to lure added numbers into the upper secondary ranks, but we are now moving on all fronts toward a narrower academic set of completion requirements for everyone. Furthermore, we are an exception among developed nations in getting as many as we do through the twelfth grade.

An alternative view suggests that current levels of dropping out amount to large-scale underdevelopment of our human resources and that society suffers tangible losses because so many young adults lack even the most basic skills.

In this article I explore the social costs that have been attributed to non-completion of school. Are these costs genuine, or are they overstated by those promoting favored agendas in our schools? What do we stand to gain through dropout preventive action? A major contention offered here is that even when approached conservatively, the costs are discernible, substantial, and growing; another is that for a variety of reasons existing efforts to inspire educational persistence fall far short of what might be justified on the basis of some returns-to-social-investment calculus. The development of this reasoning requires clarity on what is meant by social costs, assessment of the present magnitude of these costs where premature school-leaving is concerned, and the application of our findings to the rather unpromising world of dropout prevention.

Social Costs

The consequences of actions frequently flow to the actor and are thought to be private in nature. For example, the decision to earn a medical degree can lead to a variety of privately enjoyed benefits (status, income, feelings of human worth) and can require considerable private costs (tuition, foregone earnings, marital strain) for the would-be physician. When consequences extend beyond the individual actor to the larger community, they may be considered public or social in nature. The training of an additional doctor could have salutary effects on the general level of health--a public benefit perhaps extending widely, and a prospect encouraging government subsidies (social costs) for medical education.

Both the dropout and society appear to incur costs when education is cut short. We know that dropouts face higher unemployment rates than their graduating classmates, and that they are more likely to suffer periodic losses of employment and relegation to lower-paying occupations throughout their

working lives. The individual or private costs are obvious. Even if we believe that dropouts are maximizing personal utility at the time they decide to leave (when the marginal costs of staying in appear to outweigh the prospects for added benefit), research indicates that in retrospect the decision is not viewed very favorably by the dropout.(1) Private costs are eventually experienced by many school-leavers.

Society also seems to lose as a result of these individual decisions. Dropouts generate substantially less income over their lifetimes than those who finish school generally and a good deal less even than those for whom graduation day is the last they will see of school. A human capital perspective suggests that public costs result--the dropout is less productive because of a shortage of skills with which to produce and from which to draw on during on-the-job training. And the nation's productive capacity and actual output suffer because individuals have curtailed the development of their skills. The reduction in national income in turn produces public costs in the form of lower tax collections for various levels of government.

As elaborated below, a variety of other social costs have been attributed to dropping out of school.(2) The dropout is a more frequent recipient of welfare and unemployment subsidies, ostensibly because of comparatively low earnings and intermittent employment patterns. Dropouts are more likely to engage in criminal activities which can lead to direct losses of a social nature, and which also result in their comparatively high involvement with public judicial and penal services--activities we know to be expensive. Here again, we reason that lack of economic success provides a crucial link to such behavior. Higher costs for health services also have been attributed to undereducation--with lack of information regarding sound nutritional and preventive practices held up as a plausible tie. Beyond these social costs

which are reflected in public budgets, the dropout's lower evident electoral participation and the propensity of those less-schooled to have children follow in their educational footsteps can be cast as socially troublesome.

A final dimension of social cost tied to the failure of youngsters to finish high school has to do with the imbalanced distribution of the problem across groups in society. Language and ethnic minorities as well as the poor have been much more likely than others to avail themselves of a shortened school career.(3) Arguing that we bear social responsibility for this is the possibility that we have not offered to these groups the experiences or resources needed for them to benefit as fully as others from our schools.

Before discussing what we have learned about the magnitude of these costs in the United States, two controversial issues should be explored. One is this: if we were to accept this inventory of costs as a point of departure, how confident are we that these types of costs would be reduced if high school completion should become more universal? This is a complex question, and its facets must be understood if what follows is to have sufficient foundation. The other question concerns the arbitrariness of the high school diploma as a reference point for such a cost inquiry. Why not think of the social costs of undereducation as those attributed to everyone's not attaining the baccalaureate, or a master's degree, or the tenth grade for that matter?

On the first question--which largely concerns the ties between schooling and earnings--economists and sociologists have labored extensively over the past twenty years. We all recognize that individuals with higher levels of education earn more on average and tend to find themselves in higher status jobs. But disentangling the contribution of added schooling from the contributions of individual ability levels, family influences, and school quality differences has made (and continues to support) more than a few

academic careers. Let it suffice for the moment to say here that available evidence on the independent effects on income of added schooling compels us to temper any claims that newly-won graduates would be rewarded with typical earnings now experienced by school finishers. We not only recognize that current dropouts may not match their more persistent peers on all attributes rewarded in the labor market, but we also suspect that contortions of the schools designed to keep would-be dropouts in could lead to qualitative differences in schooling, differences possibly interpreted as negative by potential employers.

We have further reason for caution in our claims for the value (i.e., social cost savings) of dropout prevention, even under the most optimistic assumptions about the individual characteristics and schooling of new graduates. Economic theory suggests that taken alone, an increase in the supply of high school graduates resulting from successful dropout prevention efforts would not necessarily boost total income by the sum of projected individual earnings differentials. The added manpower supply might depress wage offers for new graduates and increase the ranks of unemployed diploma-holders. Only in the case of general labor market shortages of high school graduates or in a case of high labor demand elasticity unconstrained by minimum wages would a flood of new graduates contribute to output in ways implied by the notions of cost outlined above.

On the second question--does dropping out imply intrinsic underdevelopment of human resources and resulting social cost--our reasoning is only a little arbitrary. Every school district attends at least rhetorically to the goal of guiding all of its children to the diploma. The distance between this expression and reality suggests an identifiable gap in our public performance. And setting the high school diploma as some sort of social minimum for our

educational endeavors does not seem excessively lofty, either. If we believe college officials who maintain that many newly arrived freshmen are unfit to compose a paragraph, or employers of new high school graduates who bemoan their occasional inability to read simple instructions, we can argue that failure to inspire even these developmental levels among sizable numbers of our adolescents is indeed a public problem. Beyond these arguments, we also have chosen our frame of reference because it mirrors a very current educational policy debate.

Social Cost Estimates

Scholarly inquiries and policy imperatives regarding dropouts have accumulated steadily over the years, all suggesting that what they reveal warrants concern. And glimpses of the size of the problem are to be had in revelations about particular labor market outcomes such as inauspicious employment and earnings patterns of recent school-leavers, specific dropout rates for differing groups and locales, achievement and behavioral implications of leaving school, and so on.(4) Only one comprehensive attempt to assess the costs of dropping out to the nation is on record, Levin's 1972 study cited above. The apparent reason for this is that the task, if done well, is extremely arduous--involving the careful development of connections between education and a variety of behaviors. This in turn requires coming to grips with and incorporating a wide-ranging body of social science and behavioral evidence. Since the publication of the Levin study, subsequent observers have been generally satisfied to cite his findings of particular and sizable costs alongside their own affirmations that the consequences of dropping out are negative.

Here we update and recast these earlier findings to reflect current conditions facing the dropout, namely altered expected earnings patterns,

today's price and income levels, present dropout rates, and particular conditions found in the nation's urban school districts. We also extend the analysis to women in the labor force. And we adopt a point of view more closely approximating the interests of specific actors who may be in a position to create corrective policies.

First, a sketch of Levin's principal findings: The study examined 25 to 34 year old adult males in the United States and assessed lost economic activity attributable to the incidence of non-completion of high school in this group.(5) On the basis of 1968 Census Bureau income profiles, the total loss of lifetime earnings was estimated to be $237.6 billion. No estimates were provided for women, but a rough guess of half this cost would be reasonable. A loss of national income of this magnitude implied lost tax collections for all levels of government of about $71 billion (plus perhaps half again for women). The procedures used in the calculation of these estimates incorporated an implicit 3 percent discount rate because projected earnings were not adjusted upward for expected productivity gains over a lifetime of work. Levin argues that such a social rate of discount (3 percent) was reasonable in 1968 for an investment such as education. (Remember, this was in an earlier era for interest rates and expected returns to capital generally.) This adds tremendous importance to the dollar estimates--they can be interpreted as present values and as such expressed the current (1968) cost of the problem described. Levin also found the annual costs of added welfare and unemployment services attributable to dropping out to be about $3 billion, and another $3 billion was estimated as the annual cost deriving in a variety of ways from higher levels of criminal activity among dropouts.

These costs of dropping out approaching $250 billion fifteen years ago are best understood in the context of what might have been done to reduce the figure. If public authorities were to have doubled elementary and secondary school spending over the lives of each dropout for the group studied, and in addition were to have absorbed the added college costs because some of the new finishers would have gone on to post-secondary training, the additional expenditures necessary would total only $57 billion, according to Levin's analysis. Even this liberal estimate of the costs of addressing the problem suggests that a dollar of public investment, if effectively spent, might have brought society nearly five dollars in national income. More conservative estimates of the resources needed to encourage widespread school completion imply even higher returns. Such a level of attention to dropouts is more than an order of magnitude beyond what was then carried out either for dropout prevention or for compensatory educational services more generally.

1980s Estimates

How do these figures compare to conditions surrounding today's dropouts in the United States? A primary comparison can be made on the basis of what we now anticipate to be the economic value of high school completion--figures reflecting more current labor market conditions and price levels. A sensible building-block for this comparison is the average individual dropout. Table 1 shows the expected additional lifetime earnings for each male dropout, from age 18 to 65, implied in the earlier analysis for 1968. Also shown are parallel figures for both males and females in 1981.(6) In 1968, the high school graduate not going on to college could expect to earn $74,000 more over his lifetime than an average dropout. If it is assumed that those who dropout on average lack certain abilities rewarded by employers, the expected returns from encouraging a would-be dropout to finish are less, about $56,000, using

the 25 percent adjustment suggested by Levin. Since some who succeed in finishing high school would go on to further formal education and thus elevate their likely earnings, a more appropriate overall estimate of the returns to dropout prevention (or alternatively an estimate of the costs to society for each dropout in terms of lost national income) is about $76,000. This latter estimate is the foundation for the overall $237 billion cost figure cited for 1968.

see Table 1, page 24

Not surprisingly, expected earnings differences for the high school class of 1981 are substantially higher. Both raw earnings differentials and also figures which have been adjusted for presumed ability differences are shown in Table 1 for males and females. These data suggest that if current dropouts were to instead finish school, and if they should experience labor market conditions faced by current high school graduates, males would be expected to earn $266,000 more and females $199,000 more over their lifetimes. These cost figures are more than three and a half times the dollar figures shown for the earlier period. Even in constant dollar terms, the relative disadvantage of dropping out has increased; the Consumer Price Index increased by a factor of 2.6 over this period, and average personal weekly income increased by a factor of only 2.2 according to Bureau of Labor Statistics reports.(7)

As in 1968, these costs are substantially higher than the totals spent on the education of each individual over the course of their elementary and secondary schooling. Expenditures totaling $2,500 per year approximate school resource allocation to these individuals in 1981 dollars, and 13 full

years is certainly a generous estimate of years in school for the typical dropout. This implies a grand total of under $33,000 in educational spending for each of these youngsters who currently drop out.

These individual estimates of foregone earnings can be aggregated at the national level for further comparison. Table 2 shows that about 513,000 males and 460,000 females in a recent public school class cohort across the United States dropped out. When these numbers are extended by individual expectations of earnings losses from Table 1, a total of lost earnings for the nation is generated. What is suggested in Table 2 is that for each school class about $228 billion in lifetime earnings and about $68 billion in tax revenues for all government levels are lost because of dropouts.

see Table 2, page 25

The earnings loss shown in Table 2 can be compared to the earlier (1968) estimates in yet another way. Levin estimated a loss for 10 school year cohorts of males to be $237 billion, a figure that might have exceeded $350 billion if women had been included. A comparable cost today for a single high school class, $228 billion, is nearly two thirds of this amount. The comparison is only a little less stark in constant dollars. The $228 billion cost for one high school class translates to about $88 billion in 1968 dollars or about one fourth of Levin's total cost for ten high school classes.

Some Qualifications

Before pursuing other costs of dropping out, and before presenting cost perspectives that would be of more specific interest to school decision-makers, we should address the important reservations raised earlier. A national cost exceeding $200 billion attached to the dropouts of each school class is a

substantial sum. Would we expect an increase of this size in the nation's economic activity if we somehow achieved universal attainment of the diploma? The answer is almost certainly no, and it appears that thought should be given to how far off the mark our cost estimates might be.

Several points suggest that the costs framed in this analysis are upper bound estimates in nature. First, the calculations hinge on the independent effect that additional years of schooling for would-be dropouts might have on their earnings. Research at various levels of education has reached rather widely ranging conclusions on such effects over the years and no consensus dominates.(8) Few studies, however, have shown independent effects of years of schooling accounting for less than 50 percent of observed earnings differences. One accommodation to this reservation is built into the analysis provided, through what amounts to a 25 percent reduction in earnings differential estimates because of presumed ability differences between current dropouts and those who graduate. An additional reduction of 25 percent in the costs shown would reduce the estimated totals by one-third (to 50 percent of raw earnings differences from 75 percent).

We might also debate the choice of an appropriate discount rate with which to consider the lifetime streams of earnings central to the estimating procedures. The figures shown include an implicit discount rate--perhaps 2 or 3 percent--because anticipated earnings do not reflect any increases in productivity which might accrue over a lifetime. An additional 3 percent discounting of earnings would cut the reported differences about in half, and higher discount rates would undercut the estimates even further. One's sense of appropriate discounting underlies the evaluation of these costs in present terms.

Finally, we would tend to doubt that universal completion of high school achieved over any short period of years could take place without depressing the earnings and employment rates of all school finishers through the workings of the labor market. As such, the cost represented by the current gap is something of an overstatement of what might be recovered through successful dropout prevention, but exactly how much we do not know. For this and other reasons, we might prefer to concentrate on the marginal gains to be achieved through succeeding with small numbers of would-be dropouts. The individual costs of dropping out projected are surely better estimates of the marginal benefit of succeeding with a single youngster than they are of the average benefit per individual likely to be achieved by eliminating all dropping out. This marginal perspective also makes sense when we focus on school-based efforts to address the problem, as we elaborate further on.

Two conclusions result from these reservations taken together. One is that the overall economic activity cost figure--$228 billion nationally per graduating class--should be deflated. But even at a fourth of its projected size, or $57 billion, the magnitude remains substantial--roughly $60,000 per dropout. One must do a lot of additional deflating to suggest that mounting substantive preventive efforts might not have worthwhile payoffs. The other implication is that thinking in terms of the individual dropout who stands to gain tremendously (along with society) through his own success in school may be an appropriate policy focus.

Other Social Costs

Recall that in addition to substantial income consequences associated with dropping out, a variety of other effects have been claimed as social costs--particularly added welfare and unemployment compensation dependency, increased crime costs and costs of crime related services, and more demands on health

services. The 1972 study suggested that these costs, exclusive of health for which no dollar estimates were provided, might amount to $6 billion per year on top of the nearly $238 billion in lost national income (or on top of the $71 billion in lost tax revenues). We note that about half of the presentation in this earlier study, and a majority of its intensive grappling with a wide-ranging body of related research, occurs in the authors' efforts to provide estimates of these service costs. From the results of their scrutiny, it appears that these costs might be assumed to account for roughly two and a half percent of the overall social costs identified. For the purposes of this discussion, it may be wise to devote 97 percent of our attention on what may be 97 percent of the costs involved with dropping out--i.e., on the costs of lost economic activity. And since our information regarding earnings implications is more precise and theoretically grounded than other cost arguments, we may be better off for this focus. We do, however, employ the principles developed in Levin's work on other cost areas in certain estimates shown below.

The Dropout and the Urban School District

As we noted above, our city schools have dropout rates far exceeding national averages. More than half the students fail to finish in some schools and overall dropout rates of 40 percent are commonly reported. This suggests that some insight into the social costs of dropping out might well be generated that captures an urban point of view. We did just this at the request of the Mayor of Los Angeles recently.(11) The critical findings from this exercise and an illustrative extension of them to urban districts of other sizes appear in Table 3.

see Table 3, page 26

The figures shown in Table 3 are based on 40 percent dropout rates and individual earnings differentials estimated for 1985. The lost earnings shown assume the more modest objective of achieving high school completion only. They are based on expected lifetime earnings differences between dropping out versus completion of high school without subsequent college attendance. The costs have been adjusted downward from national profiles to reflect the prevalence of minority youngsters in urban settings and the likelihood of discrimination-related shortfalls in earnings.(12). The resulting figures--$187,000 for male dropouts and $122,000 for female dropouts are considerably lower than the $266,000 and $199,000 shown respectively for typical American dropouts earlier. Paralleling previous analyses, each Los Angeles school class is projected to generate over $3 billion less in lifetime economic activity than it might if all were to graduate. Proportional figures are shown for smaller districts--$704 million in the case of a district with 100,000 in total enrollments and $352 million for a district of 50,000 youngsters. Of course these figures are subject to the various deflationary rationales presented above, but they remain substantial.

We also used the conservative end of ranges argued to be appropriate by Levin to gauge the size of other costs of dropping-out in the Los Angeles area.(13) These are shown in Table 4.* The totals of these costs--welfare, health, and crime related services amounting to $488 million--represent about 13 percent of all costs identified. This is quite a bit higher than the 2.5 percent or so offered in the 1972 study as a national expectation. The difference no doubt reflects the relatively higher concentration of these services in urban settings and their increasing share of total economic activity over the past decade. The very rough nature of the estimating strategies suggests we use great caution in attaching fine-tuned meanings to these numbers.

* see page 27.

Implications for Dropout Prevention

Because it seems to dominate the social costs identified and because our ground for estimation is solid, the economic activity lost through the failure of youngsters to finish high school provides a fair perspective on the redressive efforts of schools. The costs shown exceed $200,000 per individual dropout and $200 billion dollars for each school class across the United States. Even if we reduce the estimates shown by a factor of ten by adopting extremely pessimistic views of labor markets for young adults or because our time preferences vastly undercut the importance of future earnings, the losses to society remain troublesome--$26,000 or so per dropout and over $20 billion per school class cohort.

A puzzle emerges when we compare these figures to the scale of current efforts to curtail dropping out. It appears that nothing approaching even these drastically reduced cost estimates is directed to the dropout or to the potential dropout in our schools. We must admit that we have no known dollar total for current dropout prevention efforts in the United States, nor do we have an accepted set of definitions for what would qualify as a dropout prevention activity. Teaching first graders to read more effectively might encourage school completion, but is this dropout prevention or simply sound educational practice? Nonetheless, experiences with legislated programs that include school continuation in their rationales are suggestive.

A recent study of dropouts in the Los Angeles School District brought public attention to its overwhelming but not untypical difficulties with school completion.(14) The district's response to the alarm was a $1 million dollar per year pilot program in 21 of its 600 or so schools. This amounts to its devoting a half a percent of its resources toward a problem which will eventually affect nearly half of its entire pupil population (or a commitment

of about $50 per dropout district-wide). Other views of our attention to dropouts are also grim. Alternative school programs are commonly sponsored because of beliefs that children leave school as a result of a variety of dissatisfactions with regular schooling arrangements. A general impression of these programs is that they allocate ideas to the problem, but little in the way of added resources--per pupil budgets for typical alternative programs seem to match those of regular school programs, and sometimes they cost even less to mount. And no body of evidence has emerged that can document systematic success for these programs with dropout prevention.

What might account for this apparent mismatch between social problem and genuine public attention? A number of contributing explanations occur to us. First, the costs may be generally underestimated by public authorities. But the rhetoric surrounding the problem these days suggests some appreciation of its magnitude by school officials and legislators. Even if the costs of dropping out are agreed to approach what is suggested here, they are not felt in full force by the institutions called upon to address the problem. The losses shown are national in impact; schools are a local and state-level enterprise, and the failure of citizens to generate income affects school officials and their organizations only marginally, indirectly, and eventually. Differing time frames between intervention and benefit may also suppress meaningful attention to dropouts. Addressing the problem requires perhaps painful allocations of current public resources for the promise of returns extending far into the future. The exigencies of electoral politics and the press of current claims can dampen enthusiasm for this type of investing.

Also contributing to what we call under-activity on this issue is our lack of consensus on what can be done to effectively encourage school completion. Zeal for large-scale dropout prevention could only follow beliefs that an

approach was likely to succeed. Much of what we see in specific current dropout prevention efforts relies on individual local champions working with small groups of struggling youngsters. And the variety of reasons offered for dropping out and the range of contexts in which it occurs appear to dictate local development of answers. No plans for a nationwide attack await our go-ahead.

The current behavior of school officials also suggests their resistance and pessimism regarding school-leavers. School budgets are generally driven by pupil numbers and districts lose resources proportionally when students exit. Despite the incentive of added annual resources amounting now to about $3000 per pupil, and added millions in total where high numbers of dropouts occur, schools are not known for their tenaciousness. Have dropouts been written-off because they may be too expensive or too troublesome to serve? Are dropouts simply out of the reach of schools long before they show signs of leaving?

As a final note, the questions raised by this discussion of the social costs of dropping out of school are likely to become more pointed in coming years. Current policy initiatives for American elementary and secondary education favor the development of higher levels of competencies among more of our youngsters. Course completion requirements for graduation, curriculum content, and exit tests are all being bolstered in the name of academic excellence. Students who are not getting past ninth grade or not developing even the barest of academic competencies by the time they enter high school presently languish in a public policy backwater. Whatever figure is believed to represent the cost of this educational deficit, it will probably grow before we act concertedly to reduce it.

Notes

1. For analysis of the recent High School and Beyond survey results on this question, see Peng, S. S., Takai, R. T., & Fetters, W. B. (1983) "High school dropouts: Preliminary results from the High School and Beyond Survey." Paper presented at the 1984 annual meeting of the American Educational Research Association.

2. The most thorough arguments linking various social costs to dropping out of school are contained in Levin, H. M., "The Costs to the Nation of Inadequate Education," Report to the Select Committee on Equal Educational Opportunity of the United States Senate, January 1972. Reprinted in: Select Committee on Equal Educational Opportunity, United States Senate, "The Effects of Dropping Out" (Washington, D.C.: U.S. Government Printing Office, 1972).

3. See Steinberg, L., Blinde, P. L., & Chan, K. S. (1982). Dropping out among language minority youth: A review of the literature. Review of Educational Research 54/1, (Spring) pp. 113-182; also Rumberger, R. W. (1983). Dropping out of school: The influence of race, sex, and family background. American Educational Research Journal, 20, p. 199-220; Also Combes, J. and Cooley, W. W. (1968). Dropping out: in high school and after high school. American Educational Research Journal, 5, pp. 343-363.

4. See, for instance, Rumberger, op.cit. (Note 3).

5. In this study, estimates of earnings differences were adjusted from raw projections for two factors. Dropouts were assumed to possess lower ability levels on average than those who complete high school; earnings differences were reduced by 25 percent as an estimate of the importance of

ability differences. An adjustment was also made to reflect that some of those who would finish high school under dropout prevention programs would go on to additional formal education; this adjustment added about 36 percent to the earnings shortfalls attributed to school-leaving.

6. 1968 figures are calculated from the Levin study. 1981 figures are based on estimates of earnings for dropouts versus those with 4 years of high school which appear in "Lifetime Earnings Estimates for Men and Women, 1979" (Washington, D.C.: U.S. Department of Commerce, Bureau of the Census, CPR Series P-60, No. 139). For all figures, zero productivity growth and no explicit discounting of future earnings are assumed. (See text for discussion of implicit discounting.) Also for the 1981 figures, a 25 percent reduction of projected differences is made for presumed ability differences between average dropouts and finishers, and a 36 percent adjustment upward is made for continuation to college. These adjustments parallel those in the Levin study. This rough adjustment for continuation to college is probably an understatement, since higher fractions of high school graduates now go on to college.

7. Bureau of Labor Statistics and Census Bureau statistics cited without further reference were obtained in Statistical Abstract of the United States: 1985, (Washington, D.C.: Department of Commerce, Bureau of the Census), 1984.

8. See Hill, C. R., "Education and Earnings: A Review of the Evidence," Economics of Education Review, Vol. 1 , no. 4 (Fall 1981): 403-420.

9. Source of enrollment estimates: The Condition of Education, 1979, (Washington, D.C.: National Center for Education Statistics, p. 60).

Adjusted for a 49%/51% male/female distribution. Numbers of dropouts assume 27 and 23 percent dropout rates for males and females respectively. Loss of tax revenues assumes a total tax share of about 30 percent of personal income, the figure used by Levin. That this figure remains appropriate for 1981 is suggested by the percentage of GNP collected in taxes by all levels of government which was about 27 percent in 1970 and 28 percent in 1982 (see Note 4 for source).

10. Here we have chosen not to belabor a set of estimates which might add $10 billion to national totals estimated to be nearly twenty times larger than this. To be fair, we should acknowledge that the growth of total public expenditures between 1970 and 1982 for welfare (460 percent), police services (380 percent), and health care (430 percent) have exceeded the growth of personal income (220 percent) according to the Census Bureau. If shares of these costs comparable to Levin's findings can be attributed to dropping out, the national total might be $20 billion and not $10 billion.

11. Catterall, J. S., "The Costs of School Dropouts to the City of Los Angeles," City of Los Angeles, Mayor's Education Advisory Committee, 1985.

12. Earnings figures have been adjusted to show 1985 price levels. In addition to a 25 percent adjustment for presumed ability differences, the projected earnings differences have been reduced by 20 percent to reflect the prevalence of ethnic minorities in urban districts who face various forms of discrimination in employment. (See Parcel, T. L. and Mueller, C. W. (1983), Ascription in Labor Markets. (New York: Academic Press). A 20 percent adjustment is consistent with research on earnings differences attributable to discrimination, but no consensus suggests an appropriate figure for use in this context. A 40 percent dropout rate for

urban districts is assumed, along with an expectation that 56 percent of dropouts will be males and 44 percent females, paralleling recent Los Angeles findings (see note 14). Lost local tax collections shown assume that about 4 percent of all income finds its way into local public budgets through various tax collections and intergovernmental transfers, a figure supported by current Census Bureau reports. Figures for the smaller districts represent proportional reductions in estimates for the 450,000 enrollment district (Los Angeles), and are provided for illustration.

13. The costs estimated for these services are based on a report of the California State Comptroller ("Annual Report 1982-83 of Financial Transactions Concerning Cities of California") and budget figures provided by Los Angeles County ("County of Los Angeles Data Guide, 1982-83"). Paralleling the Levin study, 25 percent of the budgets for crime and welfare related services and 15 percent of expenses for unemployment services are attributed to the educational deficits of dropouts. Also for these estimates, an assumed 25 percent of public health related expenditures is attributed to the undereducation of dropouts. These approximations are, of course, very rough and their merits can be debated.

14. "A Study of Student Dropout in the Los Angeles Unified School District" (Report to the Superintendent and Board by the District's Dropout Prevention and Recovery Committee, 1985.)

Table 1

Expected Lifetime Earnings Differences

For High School Graduates Compared to Non-Graduates

1968 and 1981, in $1000s

Comparison	1968 Males		1981 Males		1981 Females	
	Expected Additional Earnings ($1000s)					
	Raw	Adj.*	Raw	Adj.*	Raw	Adj.*
Graduates w/o College Over Dropouts	$ 74	$56	$260	$195	$199	$146
Graduates Including Projected College Attendees Over Dropouts	$101	$76	$354	$266	$266	$199

* Adjusted downward by 25% to reflect presumed ability deficits in dropouts; see text and Notes 5 and 6.

Table 2

Projected Total Earnings Loss to Society
For the High School Class of 1981 Due to
Dropping Out of School

Gender	Enrollment at Grade 8	Dropouts	Individual Lost Earnings (Adj.)	Total Lost Earnings
Male	1.9 million	513,000	$266,000	$136.5 billion
Female	2.0 million	460,000	$199,000	$ 91.5 billion
			Total	$228.0 billion
			Approximate loss of tax revenues:	$ 68.4 billion

See note (9).

Table 3

Illustrative Urban School Districts:

Local Economic Activity Costs of Failure to Finish High School

Per School Class (Using Los Angeles Calculation as a Basis)

District Enrollment K-12	Dropouts Per Class	Adjusted Lifetime Earnings Loss per Dropout	Total Earnings Loss per Class	Lost Local Tax Collections
450,000 (Los Angeles)	male 11,200	$187,000	$2.1 billion	
	female 8,800	$122,000	$1.1 billion	
			$3.2 billion	$120 million
100,000	male 2,489	$187,000	$465 million	
	female 1,956	$122,000	$239 million	
			$704 million	$ 28 million
50,000	male 1,245	$187,000	$233 million	
	female 978	$122,000	$119 million	
			$352 million	$ 14 million

See note (12).

Table 4

Estimated Service Costs to Local Government
in the Los Angeles Area Attributed to
School Dropouts, 1985

Type of Service	Annual Lost Estimate
City Police Services	$ 125 million
Crime-related County Services (judicial and penal)	$ 225 million
City Employment Services	$ 8 million
County Welfare Services	$ 40 million
County Health Services	$ 90 million
Total	$ 488 million

Note: Los Angeles School District Enrollment = 450,000; Estimated losses of lifetime economic activity for each class (Table 3) are $3.2 billion.

See note (13).